

WHAT IS CLAIMED IS:

1. An electric operation apparatus comprising:
  - a high-frequency generating device which generates high-frequency current for treating the body anatomy;
  - an active electrode which supplies to the body anatomy, the high-frequency current generated by the high-frequency generating device;
  - a solution supply device which supplies a conductive solution around the active electrode;
  - a return electrode which returns, via the conductive solution supplied by the solution supply device, the high-frequency current supplied to the body anatomy from the active electrode in the conductive solution;
  - a sensor which detects a conductive state of the high-frequency current that flows between the active electrode and the return electrode; and
  - a control device which determines a state of bubbles generated around the active electrode and which changes an operation mode, based on the conductive state of the high-frequency current detected by the sensor.

2. An electric operation apparatus according to Claim 1, wherein the control device has a first operation mode for starting the discharge operation using the active electrode

and a second operation mode for changing the conductive state of the high-frequency current after the start of discharge operation in the first operation mode.

3. An electric operation apparatus according to Claim 2, wherein the control device controls the flow amount of the conductive solution through the solution supply device, and changes the operation mode.

4. An electric operation apparatus according to Claim 2, wherein the control device controls the solution supply device to have a first flow amount in the first operation mode, and controls the solution supply device to a second flow amount larger than the first flow amount in the second operation mode.

5. An electric operation apparatus according to Claim 2, further comprising:

an air supply device which supplies air near the active electrode arranged in the conductive solution,

wherein the control device controls the air supply device and changes the operation mode.

6. An electric operation apparatus according to Claim 2, wherein the control device controls power of the high-

frequency generating device, and changes the operation mode.

7. An electric operation apparatus according to Claim 2, further comprising:

a heating power supply device which generates power for heating the active electrode arranged in the conductive solution,

wherein the control device controls the heating power supply device, and changes the operation mode.

8. An electric operation apparatus according to Claim 2, further comprising:

an evaporation detecting portion which detects vapor of the conductive solution so as to detect the state of the bubbles near the active electrode,

wherein the control device changes the operation mode based on a detection result of the evaporation detecting portion.

9. An electric operation apparatus according to Claim 2, further comprising:

a promotion holding portion which promotes the generation of bubbles near the active electrode or holds the bubbles,

wherein the control device controls the promotion

holding portion, and changes the operation mode.

10. An electric operation apparatus according to Claim 2, further comprising:

a discharge promoting portion which promotes the discharge operation in the active electrode,

wherein the control device controls the discharge promoting portion, and changes the operation mode.

11. An electric operation apparatus according to Claim 4, wherein the control device sets the operation of the solution supply device to a stop state thereof in the first operation mode, and sets the operation of the solution supply device to a solution supply state thereof in the second operation mode.

12. An electric operation apparatus according to Claim 5, wherein the control device operates the air supply device in the first operation mode, and stops the operation of the air supply device in the second operation mode.

13. An electric operation apparatus according to Claim 5, wherein the control device operates the air supply device after outputting the high-frequency current to the active electrode only when no discharge operation starts in the

active electrode, and stops the air supply device when the discharge operation starts in the active electrode.

14. An electric operation apparatus according to Claim 6, wherein the control device controls the high-frequency generating device to first power in the first operation mode, and controls the high-frequency generating device to second power lower than the first power in the second operation mode.

15. An electric operation apparatus according to Claim 7, wherein the control device operates the high-frequency generating device in the first operation mode, and stops the operation of the heating power supply device in the second operation mode.

16. An electric operation apparatus according to Claim 7, wherein the high-frequency current is outputted to the active electrode, nearly simultaneously, the heating power supply device outputs DC or AC current to heat the active electrode and, upon detecting the start of discharge operation in the active electrode, nearly simultaneously, the control device stops the DC or AC current outputted from the heating power supply device.

17. An electric operation apparatus according to Claim 7, wherein an edge portion of the active electrode is spiral-shaped or saw-blade-shaped.

18. An electric operation apparatus according to Claim 8, wherein the control device operates the high-frequency generating device so that the peak of the high-frequency power or a crest factor of the high-frequency current is increased before detecting the evaporation of the conductive solution in the first operation mode, and operates the high-frequency generating device so that the peak of the high-frequency power or the crest factor of the high-frequency current is decreased after detecting the evaporation of the conductive solution in the second operation mode.

19. An electric operation apparatus according to Claim 9, wherein the promotion holding portion is a solution supply stop portion which temporarily stops the solution supply of the conductive solution through the solution supply device, and

the control device operates the solution supply stop portion in the second operation mode.

20. An electric operation apparatus according to Claim 9, wherein the promotion holding portion is a bubble

adhering portion which adheres bubbles near the active electrode.

21. An electric operation apparatus according to Claim 10, wherein the discharge promoting portion is an air supply device which supplies air near the active electrode arranged in the conductive solution.

22. An electric operation apparatus comprising:  
a high-frequency generating device which generates high-frequency current for treating the body anatomy;  
an active electrode which supplies, to the body anatomy, the high-frequency current generated by the high-frequency generating device;

a solution supply device which supplies a conductive solution around the active electrode;

a return electrode which returns, via the conductive solution supplied by the solution supply device, the high-frequency current supplied to the body anatomy from the active electrode in the conductive solution;

a sensor which detects a conductive state of the high-frequency current that flows between the active electrode and the return electrode; and

a control device which has a first operation mode for starting the discharge operation by the active electrode and

a second operation mode for changing the conductive state of the high-frequency current after the start of discharge operation in the first operation mode, and which determines a state of bubbles generated around the active electrode and which changes the operation mode, based on the conductive state of the high-frequency current detected by the sensor.

23. A control method of an electric operation apparatus, comprising:

a solution supply step of supplying a conductive solution around an active electrode by a solution supply device;

a first high-frequency output step of outputting high-frequency current in a first operation mode from a high-frequency generating device, when the active electrode is arranged in the conductive solution in the solution supply step;

a detecting step of detecting a conductive state of the high-frequency current flowing between the active electrode and a return electrode in the high-frequency output step;

a determining step of determining a state of bubbles generated around the active electrode based on a detection result in the detecting step; and

a second high-frequency output step of outputting the high-frequency current in a second operation mode based on a



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determination result in the determining step.